Earnings of college graduates, 1993

Wide variations in earnings exist within and across fields of study, a major determinant of earnings among college graduates

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Numerous reports based on data from the Current Population Survey, the decennial census, and other surveys clearly establish that the median earnings of workers with a bachelor's or higher level degree exceed the median earnings of those with less education. These data are often interpreted to mean that a college degree is a guarantee of high earnings; frequently overlooked, however, are data indicating that some college graduates earn substantially more, and others much less, than the median.[1] Furthermore, for those developing their education and career plans, not much information is available on the factors associated with high and low earnings of college graduates. This article adds to the available information with a new analysis of the variation in earnings by major field of study, degree level, and occupation. Data on earnings are provided for men and women in 31 major fields of study and 34 occupations or occupation groups.

Data limited to recent college graduates show wide variation in median earnings by field of study. Those who majored in engineering, the health fields, computer and information sciences, and the physical sciences had the highest earnings, those in education, psychology, and the humanities the lowest.[2] Studies covering graduates with more work experience show similar results, but small sample sizes have restricted the possible analyses.[3] The decennial census has a very large sample of college graduates who provide information about their degree levels, but not their fields of study. In April 1993, however, the National Science Foundation (NSF) sponsored a survey of 215,000 individuals who had reported having a bachelor's or higher level degree in the 1990 decennial census. The data from this very large sample enabled the bls to conduct a much more detailed analysis of the relationship of field of study and degree level to earnings than any previous survey permitted.[4] Based on that analysis, this article focuses primarily on the earnings of bachelor's degree graduates employed full time.[5] These graduates account for 12.8 million of the more than 20 million college graduates employed full-time in 1993 who reported having a college degree in the 1990 census.

The data from the 1993 NSF survey agree with findings from numerous earlier studies: median earnings of college graduates increase with degree level, and at every age and degree level, men earn substantially more than women do. Earnings also increase with age, but significantly more for men than for women. (See table 1.) Because the intent of the analysis in this article is to focus on the differences in earnings among fields of study, all earnings data are presented separately for men and women to avoid biases stemming from fields of study in which enrollments have traditionally been dominated by one sex or the other. Also, to avoid biases introduced by differences in the age distribution of workers in specific fields of study, much of the data are classified into three age groups: young (25–34), midcareer (35–44), and older (45–64) workers.[6]

The variation in the earnings of graduates with bachelor's degrees by major field of study also is analyzed using quintiles—the ranges within which each fifth of the earnings distribution for graduates in all fields of study falls. For the middle three quintiles—the range within which 60 percent of graduates in all fields of study fall—those at the top of the range earned about

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Table 1. Employment and median annual earnings of college graduate aged 25–64, by age group, sex, and degree level

Age	All degree levels	Bachelor's degree	Master's degree	Doctoral degree	Professional degree
Men					
Employment	12,397,500	7,691,422	2,938,519	633,895	1,133,664
Medium annual earnings:					
25–64 years ..	$46,505	$42,498	$49,412	$57,659	$80,400
25–34 years ..	37,251	35,694	42,342	42,857	48,669
35–44 years ..	46,935	43,199	49,738	52,988	82,251
45–64 years ..	52,308	49,390	51,185	62,248	90,005
Women					
Employment	8,011,548	5,097,578	2,381,857	209,638	322,475
Medium annual earnings:					
25–64 years ..	$34,082	$31,120	$37,898	$45,860	$54,200
25–34 years ..	30,558	29,660	33,432	36,281	40,197
35–44 years ..	34,991	32,155	37,546	43,384	59,506
45–64 years ..	36,225	32,093	39,819	49,823	60,600

NOTE: Includes only those graduates working full time in 1993 who had a bachelor's or higher level degree in April 1990. Excludes graduates who reported being health-diagnosing or health-treating practitioners whose highest degree was other than professional.

SOURCE: Tabulated by the Bureau of Labor Statistics from a National Science Foundation survey conducted by the Bureau of the Census.

twice as much as those at the bottom. (See table 2.) For young men, the range was $25,001 to $50,000, for men in midcareer, $30,001 to $62,400, and for older men, $30,837 to $75,000. Among women, top earnings were also about twice the bottom, but unlike men, the highs and lows for midcareer and older women were almost the same.[7]

Summary of findings

There is a clear relationship between major field of study and earnings for graduates at all ages and for both sexes. In some majors, graduates have median earnings well below the median for all fields of study. Graduates in fields with low median earnings are more likely than other graduates to have earnings in the lowest earnings quintiles, compared with all graduates, and are less likely to be in the highest. Philosophy, religion, and theology; social work; visual and performing arts; linguistics/foreign languages and literature; and education are among the fields of study in which graduates earned the least. Most liberal arts fields were below average. Among the fields of study in which graduates earn more than the median for all majors are engineering, mathematics, computer and information sciences, economics, and pharmacy. Nevertheless, for every major, there were some graduates in the highest and some in the lowest earnings groups, indicating that other factors besides the major are important in determining the level of earnings for an individual. Men had higher earnings than women in almost all fields of study, all age groups, and all degree levels.

Graduates in some majors tend to have low earnings because their employment is concentrated in low-paying occupations. Likewise, those with high earnings are concentrated in high-paying occupations. For example, about half of the women who majored in education were employed as teachers, an occupation that has relatively low wages among occupations requiring a college degree. In contrast, more than half of the men and women graduates of engineering programs were employed as engineers, a relatively high-paying occupation. Also, in any field of study, those employed in high-paying occupations, such as manager, tended to have higher earnings than other graduates in the same field. However, those in low-paying majors who were employed as managers tended to earn less than those in high-paying majors who were employed as managers.

A note about the data

Data were tabulated from the nsf survey mentioned earlier. The majority of respondents were bachelor's degree holders (See table 1.) Because the sample of respondents was drawn from all persons who reported having a bachelor's or higher level degree in the 1990 census, individuals who received a bachelor's degree after April 1990 are not included. Therefore, the average earnings in 1993 presented in this article for any field of study or occupation are upward biased because new graduates tend to earn less than those with more experience. For the same reason, the median earnings of young college graduates aged 25–34 are biased upward, because those who received their degrees since 1990 would tend to be in the younger part of this age group and have lower earnings. Workers older than 64 years were also excluded from the analysis: after age 64, earnings tend to decrease, and therefore, fields of study that had few graduates in the older-than-64 age group, such as computer and information sciences, which did not really exist prior to the 1970's, would tend to be biased upward.

Although data were collected for about 150 fields of study, for purposes of reliability some fields were combined, reducing the number presented in the tables to 31. In general, a field was included only if the total number of bachelor's degree graduates represented by the sample for men and women combined was more than 50,000. Data are not presented in the tables for major fields of study and occupations whose samples numbered less than 3,000.

Table 3, which presents earnings by major field of study for each age group, also presents data for each major by age group indexed to the earnings for all major fields of study for that age group. In the table, major fields of study are ranked

in descending order by the index for men aged 35–44, the largest group of workers. Indexes for women, therefore, are not in descending order.

Table 4 shows the distribution of earnings by quintile for each field of study for workers aged 35–44 (midcareer workers). A significant portion of the analysis that follows focuses on this table in order to minimize the effect of age.[8] The table ranks majors by the proportion of earners in the highest quintile. Table 5, which presents employment and earnings by field of study and occupation, presents data for all graduates aged 25–64. This table provides more observations in order to capture the occupational effect of field of study.

Earnings by major field of study

Men and women by age. Earnings of men were higher than earnings for women for nearly all fields of study in all age groups. For young workers, women had higher earnings ($29,077) than men ($28,830) only in the field of linguistics/foreign languages and literature. (See table 3.) Midcareer women had higher earnings than did midcareer men in architecture/environmental design, and older women's earnings exceeded older men's in the field of philosophy, religion, and theology.

The differential between the earnings of men and women generally was less for young workers aged 25–34. The average earnings of men in this age group were 20 percent higher than those of women, although none of the individual fields of study had differences in earnings which were that high. The high difference between the averages for men and women largely reflects the heavy concentration of women in the low-paying field of education, including physical education, and the much larger number of men in the higher paying fields of engineering, mathematics, and computer and information sciences. In the highest paying fields, however, women's earnings were very close to those of men, especially in engineering and mathematics, where the differences were 1 percent and 5 percent, respectively.

For midcareer workers aged 35–44, the average earnings of men were 34 percent higher than those of women, and for older workers aged 45–64, the difference was 54 percent. Clearly, some of this difference continued to reflect the heavy concentration of female graduates with bachelor's degrees in education, including physical education; but, as is clearly seen in table 3, the earnings of men increased significantly with age in nearly all fields, while the earnings of women increased less than those of men from young workers to midcareer workers and increased from midcareer workers to older workers only in 11 of the 28 fields for which data were developed.

Fields of study in which earnings were higher or lower than average for each age group were fairly consistent for men and women. Midcareer women who majored in engineering, economics, and pharmacy had very high premiums. Women in health/medical technologies also earned above the average for women in each age group, while men in this field earned less than the average for men. Nevertheless, the average earnings of men in the field were higher than those of women in all three age groups.

Several noteworthy findings with respect to women emerge from the data. An important factor contributing to female college graduates earning less than male college graduates is career choice. Women choose majors that lead to high earnings less frequently than men do. As an example, in 1993, only 1.5 percent of women with a bachelor's degree had a major in engineering, compared with 13.3 percent of men. Conversely, many more women than men choose lower paying fields, such as education—23.7 percent for women, compared with 6.4 percent for men. Still, in nearly all majors and in all age groups, women earn less than men. Furthermore, within most majors, women have lower earnings gains with age than do men. By ages 45-64, men college graduates earned 38 percent more, on average, than did 25- to 34-year-

Table 2. Quintile earnings ranges of graduates with bachelor's degrees, by age group and sex, 1993

Age	Top	Next to top	Middle	Next to bottom	Bottom
Men					
25–34 years	More than $50,000	$40,001–$50,000	$32,001–$40,000	$25,001–$32,000	$25,000 or less
35–44 years	More than 62,400	49,001–62,400	39001–49,000	30,001–39,000	30,000 or less
45–64 years	More than 75,000	55,001–75,000	42,985–55,000	30,837–42,984	30,836 or less
Women					
25–34 years	More than $40,810	$32,761–$40,810	$26,701–32,760	$21,001–26,700	$21,000 or less
35–44 years	More than 47,000	36,001–47,000	29,642–36,000	22,551– 29,641	22,550 or less
45–64 years	More than 45,800	36,001–45,000	29,521–36,000	22,215–29,520	22,214 or less

NOTE: Includes only those graduates working full time in 1993 who had a bachelor's degree in April 1990.

SOURCE: Tabulated by the Bureau of Labor Statistics from a National Science Foundation survey conducted by the Bureau of the Census.

Table 3. Employment, median annual earnings, and index of earnings for bachelor's degree graduates aged 25–64

Major field of study	Employment (thousands)	25–34 years	35–44 years	45–64 years	25–34 years	35–444 years	5–64 years
Men							
All major fields of study	7,691.4	$35,694	$43,199	$49,390	1.00	1.00	1.00
Engineering	1,030.1	43,518	53,286	59,213	1.22	1.23	1.20
Mathematics	163.1	36,830	51,584	56,388	1.03	1.19	1.14
Computer and information sciences	222.3	41,311	50,509	51,943	1.16	1.17	1.05
Pharmacy	79.5	48,980	50,480	51,026	1.37	1.17	1.03
Physics	48.4	40,254	50,128	61,965	1.13	1.16	1.25
Accounting	623.1	39,096	49,500	54,737	1.10	1.15	1.11
Economics	154.9	36,657	49,377	52,263	1.03	1.14	1.06
Engineering-related technologies	199.7	38,685	45,799	51,278	1.08	1.06	1.04
Chemistry	96.4	35,397	44,989	52,146	.99	1.04	1.06
Business, except accounting and actuarial science	1,876.5	34,938	44,865	50,895	.98	1.04	1.03
Nursing	25.2	(1)	44,677	(1)	(1)	1.03	(1)
Physical therapy and other rehabilitation/ therapeutic service	12.7	(1)	(1)	(1)	(1)	(1)	(1)
Architecture/environmental design	92.0	33,043	42,603	47,211	.93	.99	.96
Geology	46.7	36,928	42,321	49,007	1.03	.98	.99
Biological/life sciences	227.9	33,128	41,178	43,259	.93	.95	.88
Political science and government	188.7	33,272	41,022	49,922	.93	.95	1.01
Psychology	187.8	30,655	40,716	45,511	.86	.94	.92
Criminal justice/protective service	100.7	29,400	40,148	44,862	.82	.93	.91
Liberal arts/general studies	63.0	31,387	39,628	43,212	.88	.92	.87
Home economics	5.9	(1)	(1)	(1)	(1)	(1)	(1)
Communications	251.6	30,767	38,915	49,984	.86	.90	1.01
English language and literature/letters	142.2	28,505	38,299	43,193	.80	.89	.87
History	206.7	30,419	38,093	42,320	.85	.88	.86
Sociology	114.3	29,139	37,249	45,754	.82	.86	.93
Agriculture.	190.8	31,828	36,577	39,792	.89	.85	.81
Health/medical technologies	16.3	(1)	36,269	37,449	(1)	.84	.76
Education, including physical education	488.7	26,367	34,470	38,312	.74	.80	.78
Linguistics/foreign languages and literature	36.7	28,830	33,780	37,846	.81	.78	.77
Visual and performing arts	226.5	25,634	32,972	36,441	.72	.76	.74
Social work	21.6	(1)	32,171	30,206	(1)	.74	.61
Philosophy, religion, and theology	115.5	25,071	31,848	30,516	.70	.74	.62
Other fields (not listed)	436.0	30,108	38,110	42,155	.84	.88	.85
Women							
All major fields of study	5,097.6	$29,660	$32,155	$32,093	1.00	1.00	1.00
Engineering	75.7	43,276	49,070	38,711	1.46	1.53	1.21
Mathematics	86.1	35,046	37,523	34,712	1.18	1.17	1.08
Computer and information sciences	95.6	38,960	43,757	36,317	1.31	1.36	1.13
Pharmacy	29.7	47,507	48,427	46,148	1.60	1.51	1.44
Physics	2.6	(1)	(1)	(1)	(1)	(1)	(1)
Accounting	274.9	35,742	39,841	35,254	1.21	1.24	1.10
Economics	33.0	34,508	37,494	36,664	1.16	1.17	1.14
Business, except accounting and actuarial science	671.8	30,162	34,636	33,611	1.02	1.08	1.05
Nursing	305.1	35,923	40,928	40,908	1.21	1.27	1.27
Physical therapy and other rehabilitation/ therapeutic service	59.3	38,450	40,869	46,929	1.30	1.27	1.46
Architecture/environmental design	17.7	31,370	46,353	(1)	1.06	1.44	(1)
Geology	5.9	(1)	(1)	(1)	(1)	(1)	(1)
Biological/life sciences	156.9	29,399	34,243	32,716	.99	1.06	1.02
Political science and government	80.3	28,506	31,758	32,258	.96	.99	1.01
Psychology	204.6	26,338	32,300	32,078	.89	1.00	1.00
Criminal justice/protective service	37.8	26,037	31,816	(1)	.88	.99	(1)
Liberal arts/general studies	68.6	30,672	32,074	36,805	1.03	1.00	1.15
Home economics	122.8	22,812	28,275	28,009	.77	.88	.87
Communications	207.8	27,316	34,102	37,419	.92	1.06	1.17
English language and literature/letters	222.1	27,388	30,295	31,740	.92	.94	.99
History	91.2	25,990	30,552	30,284	.88	.95	.94
Sociology	141.8	25,762	29,531	32,039	.87	.92	1.00
Agriculture	34.8	28,178	28,751	(1)	.95	.89	(1)
Health/medical technologies	65.1	32,528	35,525	36,035	1.10	1.10	1.12
Education, including physical education	93.0	29,077	32,656	32,841	.98	1.02	1.02
Visual and performing arts	269.3	24,643	29,604	30,013	.83	.92	.94
Social work	85.1	23,333	28,594	28,956	.79	.89	.90
Philosophy, religion, and theology	20.5	(1)	25,788	33,591	(1)	.80	1.05
Other fields (not listed)	280.1	29,069	31,401	34,999	.98	.98	1.09

(1) Not statistically reliable.

NOTE: Fields of study are ranked in descending order for men aged 35-44 and include only those graduates working full time in 1993 who had a bachelor's degree in April 1990.

SOURCE: Tabulated by the Bureau of Labor Statistics from a National Science Foundation survey conducted by the Bureau of the Census.

olds. For women, the earnings gain over the same age span was only 8 percent. (See table 3.) An additional factor affecting the earnings of women is the occupation in which they are employed. Slightly more than 10 percent of women with a bachelor's degree in 1993 were employed in clerical occupations and were earning 25 percent below the median for all female graduates. For men, only 2.5 percent were so employed, and those who were earned more than 25 percent more than women in clerical occupations. (See table 5.)

Midcareer workers. Median earnings for midcareer workers varied widely by major field of study. For men, earnings were highest in engineering, which exceeded their lowest earnings field—philosophy, religion, and theology—by two-thirds. For women, earnings of engineering graduates were almost double those with degrees in philosophy, religion, and theology. (See table 4.) Among men, engineering majors had the highest median earnings, $53,286, which was 23 percent above the $43,199 median for midcareer men. Mathematics majors had the second highest median earnings, and computer and information sciences and pharmacy shared third place, followed by physics, accounting, and economics.

Midcareer women with economics majors had median earnings of $49,170, those with engineering majors $49,070, each 53 percent above the median of $32,155 for all midcareer women. Fifty-seven percent of midcareer female engineering majors and 54 percent of midcareer female economics majors were in the top quintile of earners, with earnings of $47,000 or more.

Earnings in some major fields of study are concentrated in the upper quintiles, earnings in others in the lower. (See table 4.) About 29 percent of male engineers were concentrated in the highest quintile—above $62,400. Furthermore, only 9 percent of male engineering graduates were in the lowest earnings quintile ($30,000 or less). In addition to engineering and economics, major fields of study in which midcareer women had high median earnings included pharmacy, architecture/environmental design, computer and information sciences, nursing, physical therapy, and accounting. In each of these fields, 26 or more percent of graduates were in the upper earnings quintile and less than 18 percent in the lowest quintile.

Female nursing and physical therapy graduates had more than 65 percent of earners in the top two quintile ranges and only 5 and 4 percent, respectively, in the lowest. This distribution reflects the fact that the great majority of graduates in these two fields enter the occupation related to their major and that earnings within the occupation are high and fall within a narrow range. The situation is the same for pharmacy, for which 74 percent of men and 86 percent of women are concentrated in the top two quintiles. In fact, midcareer female pharmacists had medians just below those of engineers and economists and, with 62 percent in the top quintile, were the highest ranked. Women with health/medical technologies majors were concentrated in the second and third quintiles and had only 4 percent in the lowest quintile. Criminal justice/protective service majors had medians slightly below the overall medians and were concentrated in the middle three quintiles, probably reflecting the large proportion of such majors entering protective service and related occupations.

For both men and women, median earnings for graduates in business administration, the largest field of study for men and the second largest for women, were slightly above the corresponding medians for all majors, and the earnings of business graduates were fairly evenly distributed within the five quintiles. Also for both sexes, biological/life sciences, political science and government, and psychology graduates had medians close to that of all major fields of study.

Philosophy, religion, and theology graduates had the lowest median earnings for both men and women. Midcareer men with a major in this field had median earnings of $31,848, only 74 percent of the median for all majors, and midcareer women with a major in the field earned a median $25,788, 80 percent of the median for all majors. Only 12 percent of the midcareer male graduates in the field were in the top quintile of the earnings distribution for their sex, while 20 percent of the women were. However, very high proportions of these graduates were in the lowest quintiles: forty-seven percent of men earned less than $30,000, and 32 percent of women earned less than $22,600. The following tabulation lists all majors with 30 percent or more of workers in the lowest quintile for their sex:

	Percent
Women ($22,550 or less):	
Philosophy, religion, and theology	32
Agriculture	32
Men ($30,000 or less):	
Philosophy, religion, and theology	47
Visual and performing arts	43
Social work	43
Linguistics/foreign languages and literature	40
Education, including physical education	37
Sociology	34
Communications	31
Agriculture	31
History	31
Political science and government	30
English language and literature/letters	30

In liberal arts fields, women with majors in linguistics/foreign languages and literature; psychology; liberal arts/general studies; and political science and government had medians just at the median for all major fields of study, while women with majors in history, English language and litera-

Table 4. Employment, median annual earnings, and index of earnings for bachelor's degree graduates aged 35–64, by major field of study, age group, age group, and sex, 1993

Major field of study	Median annual earnings	Percent with annual earnings—				
		Greater than $62,400	From $49,001 to $62,400	From $39,001 to $49,000	From $30,001 to $39,000	Of $30,000 or less
Men						
All major fields of study	$43,199	19.9	20.0	19.4	17.6	23.1
Engineering	53,286	28.8	34.3	17.9	9.9	9.0
Economics	49,377	28.7	21.8	14.9	16.0	18.6
Physics	50,128	28.3	26.0	19.0	14.6	12.0
Mathematics	51,584	27.9	28.0	15.8	15.3	13.0
Accounting	49,500	26.1	24.8	20.4	13.9	14.9
Business, except accounting and actuarial science	44,865	23.7	19.1	20.3	15.4	21.4
Computer and information sciences	50,509	23.4	30.9	25.0	12.5	8.2
Chemistry	44,989	22.9	20.0	17.1	21.1	18.9
Political science and government	41,022	22.4	17.8	14.3	15.5	30.1
Liberal arts/general studies	39,628	21.6	12.6	16.1	24.3	25.4
Communications	38,915	20.9	14.5	13.7	19.8	31.1
English language and literature/letters	38,299	18.7	15.3	15.3	20.3	30.4
Architecture/environmental design	42,603	18.6	18.0	21.6	20.1	21.7
Psychology	40,716	17.3	16.2	19.4	19.9	27.2
Biological/life sciences	41,178	16.4	14.5	23.6	20.7	24.7
Geology.	44,677	15.2	14.1	39.9	19.6	11.2
Sociology	37,249	15.1	11.4	17.5	22.4	33.6
Engineering-related technologies	45,799	14.5	27.7	23.5	17.4	16.9
Agriculture.	36,577	13.1	10.2	22.4	23.1	31.2
Visual and performing arts	32,972	12.2	11.9	14.0	19.0	42.9
Philosophy, religion, and theology	31,848	11.5	7.2	15.4	18.8	47.0
History.	38,093	11.2	18.9	18.1	20.9	31.0
Pharmacy	50,480	11.1	47.2	26.8	7.9	7.0
Criminal justice/protective service	40,148	10.9	16.7	24.0	33.3	15.1
Education, including physical education	34,470	8.5	11.1	18.6	24.5	37.4
Health/medical technologies	36,269	6.2	10.9	21.2	39.7	22.0
Linguistics/foreign languages and literature	33,780	4.9	11.2	13.3	31.1	39.5
Social work	32,171	3.7	17.5	16.7	18.9	43.2
Other fields (not listed)	38,397	13.0	14.8	21.2	22.8	28.2
		Percent with annual earnings—				
Women		Greater than $47,000	From $36,001 to $47,000	From $29,642 to $36,000	From $22,551 to $29,641	Of $22,550 or less
All major fields of study	$32,155	19.9	19.2	20.9	20.0	20.0
Pharmacy	48,427	62.4	23.4	6.7	1.2	6.4
Engineering	49,070	56.5	18.1	10.2	7.8	7.4
Economics	49,170	53.9	8.6	15.0	5.3	17.2
Architecture/environmental design	46,353	50.2	19.1	10.4	9.7	10.6
Computer and information sciences	43,757	41.2	28.8	16.0	10.1	3.9
Mathematics	37,523	36.9	14.7	15.7	16.6	16.1
Physical therapy and other rehabilitation therapeutic service	40,869	35.5	31.1	19.6	10.1	3.7
Accounting	39,841	33.7	24.7	14.9	13.9	12.9
Chemistry	37,494	28.2	23.3	17.6	13.7	17.3
Communications	34,102	28.1	14.5	22.0	21.6	13.9
Political science and government	31,758	27.3	12.4	26.1	17.3	16.8
Nursing	40,928	26.6	41.3	19.6	7.5	4.9
Business, except accounting and actuarial science	34,636	24.5	21.3	20.6	16.5	17.1
Psychology	32,300	21.9	19.7	20.4	19.3	18.6
Biological/life sciences	32,656	20.0	20.2	23.6	17.7	18.5
Philosophy, religion, and theology	25,788	20.0	4.8	11.7	31.5	32.0
Liberal arts/general studies	32,074	18.0	13.3	29.0	21.4	18.2
Agriculture.	28,751	18.0	7.6	20.6	22.0	31.7
Visual and performing arts	29,604	17.6	15.8	19.0	20.6	27.0
History	30,552	17.0	22.4	14.8	22.4	23.4
Sociology	29,531	17.0	14.2	19.1	25.1	24.5
English language and literature/letters	30,295	15.4	17.8	21.5	24.0	21.3
Health/medical technologies	35,525	13.8	30.5	38.9	12.8	4.1
Criminal justice/protective service	31,816	10.2	24.7	25.8	27.4	11.9
Social wor	28,594	10.1	12.6	24.3	29.1	23.9
Home economics	28,275	9.8	13.8	20.2	27.6	28.5
Education, including physical education	27,988	8.3	13.8	22.4	27.3	28.2
Other fields (not listed)	31,985	19.6	17.3	23.4	16.3	23.3

NOTE: For each sex, fields of study are ranked in descending order of percent in top quintile and include only those graduates working full time in 1993 who had a bachelor's degree in April 1990. Earnings of individuals at one level were not split between quintiles. [Au: Please explain preceding. I don't understand.] Therefore, for all major fields, the percent in each quintile may vary from 20.

SOURCE: Tabulated by the Bureau of Labor Statistics from a National Science Foundation survey conducted by the Bureau of the Census.

ture/letters, and sociology were somewhat below the median. For men, all of these fields had medians below that of all major fields of study, and except for liberal arts/general studies and psychology majors, 30 percent or more earned in the lowest quintile—$30,000 or less.

While there is no degree that guarantees a high-paying job, the odds of being in a low-paying job are much less in some fields than in others. Besides engineering, less than 10 percent of male pharmacy and computer and information sciences majors were in the lowest earnings quintile, while women in six major fields of study—physical therapy and other rehabilitation/therapeutic services, computer and information sciences, health/medical technologies, nursing, pharmacy, and engineering—had less than 10 percent of workers in the lowest quintile.

Among the workers in the lowest quintile, 59 percent of the women and 48 percent of the men received their bachelor's degree in education, including physical education; business, excluding accounting and actuarial science; visual and performing arts; and the social sciences. [Au: Which particular fields in the tables are you including under the rubric of social sciences?] For women, education majors accounted for more than one-third of the women in the low-earnings quintile.

Earnings by occupation

Earnings of graduates with bachelor's degrees varied widely by occupation. Among men, top and midlevel managers, executives, and administrators had median earnings more than twice those for clergy and other religious workers and librarians, archivists, and curators. (See table 5.)[9] Among women, engineers earned almost twice as much as clerical and administrative support workers.

For many fields of study, there is a direct relationship between the field and the occupations its graduates pursue. For both male and female graduates with bachelor's degrees in seven major fields—pharmacy, nursing, physical therapy and other rehabilitative/therapeutic services, computer and information sciences, engineering, accounting, and health/medical technologies—more than half were in occupations directly related to their major. (See table 5.) More than half of the male graduates in architecture/environmental design and female graduates in education were also in occupations directly related to their major. In addition, between one-third and one-half of the men who majored in criminal justice/protective service, engineering-related technologies, education, and geology were in directly related occupations, as were women with majors in social work and architecture/environmental design. Those of both sexes who majored in business, excluding accounting and actuarial science, were concentrated in managerial and in a wide range of mostly business-related occupations. Relatively few mathematics majors, however, were mathematical scientists, although about a third of the women and nearly half of the men were computer scientists or engineers.

In contrast, some majors had a very weak link, or no link at all, to related occupations. For example, virtually no history majors with a bachelor's degree were historians, and few political science and government majors were political scientists. Other fields of this nature were economics, psychology, and sociology. Majors with no clear occupational link generally had a significant proportion of graduates in managerial, nonretail sales, clerical, and, in some cases, teaching occupations.

Because of the close link between major field of study and occupation, majors with large proportions of workers going into high-paying occupations had higher median earnings, and conversely, those associated with low-paying occupations had low median earnings. Besides managers and engineers, computer specialists, pharmacists, accountants, and nonretail salesworkers earned the most, while teachers, social workers, clerical employees, retail salesworkers, food and other service workers, and craft and precision production workers earned the least.

Nineteen percent of men and 8 percent of women were employed as managers and generally had higher earnings than average for their field of study. Middle and top managers had earnings premiums of 20 percent to 50 percent above the median for workers in their major, while graduates in occupations at the bottom of the earnings scale—mostly clerical, retail sales, and craft and production workers—earned 25 percent to 30 percent below the median for their major. Nonengineering majors employed as engineers earned above the median for their major, as did graduates in some majors who were employed in nonretail sales occupations. Education majors, some liberal arts majors, and business graduates employed in insurance, securities, real estate, and business sales occupations earned particularly high premiums. Engineering majors who were in nonretail commodities or other marketing and sales occupations, management-related occupations, and craft occupations had higher median earnings than the median for all major fields of study, suggesting that their degrees were valuable outside the field of engineering. Engineering majors in clerical, retail sales, and insurance, securities, real estate, and business service sales occupations, however, earned less than graduates of other fields of study employed in these occupations.

Among men in computer occupations, those who majored in computer and information sciences had median earnings slightly below the median for all men in computer occupations, while those who majored in mathematics, physics, and engineering earned more. This is due in large part to com-

Table 5. Employment and median annual earnings of college graduates by major field of study and occupation, 1993

Occupation	Employment (in thousands)	Median annual earnings
Men		
All major fields of study:		
All occupations	7,691.4	$42,498
Top and midlevel managers, executives, and administrators	1,499.7	55,633
Mathematical scientists	21.2	53,573
Engineers, including computer	442.7	49,222
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	133.2	47,612
Computer occupations, excluding engineers	447.8	44,912
Sales occupations, other marketing and sales	248.5	44,355
Accountants, auditors, and other financial specialists	320.8	43,497
Personnel, training, and labor relations specialists	90.5	42,803
Architects	71.5	42,180
Other management-related occupations	444.4	40,763
Physical scientists	81.2	40,678
Transportation and material-moving occupations	126.1	40,149
Protective service occupations	154.8	38,510
Top and midlevel managers, executives, and administrators	176.0	66,123
Engineers, including computer	586.9	51,483
Sales occupations, insurance, securities, real estate, and business		
Computer occupations, excluding engineers	39.2	48,410
Sales occupations, other marketing and sales	13.0	56,749
Accountants, auditors, and other financial specialists	5.9	40,523
Men		
Architecture/environmental design:		
All occupations	92.0	$41,287
Top and midlevel managers, executives, and administrators	13.6	44,929
Engineers, including computer	3.7	44,065
Architects	50.0	41,920
Geology:		
All occupations	46.7	$41,142
Top and midlevel managers, executives, and administrators	6.5	46,624
Engineers, including computer	4.1	38,567
Physical scientists	15.7	42,044
Psychology:		
All occupations	187.8	$40,660
Top and midlevel managers, executives, and administrators	32.5	52,147
Engineers, including computer	3.0	43,682
Sales occupations, insurance, securities, real estate, and business services	10.3	47,929
Computer occupations, excluding engineers	12.4	45,960
Sales occupations, commodities except retail	13.1	43,405
Other management-related occupations	12.2	38,834
Social workers	10.7	30,220
Biological/life sciences:		
All occupations	227.9	$39,648
Top and midlevel managers, executives, and administrators	37.5	51,050
Engineers, including computer	10.5	44,220
Computer occupations, excluding engineers	9.6	46,095
Sales occupations, other marketing and sales	9.3	45,899
Sales occupations, commodities except retail	13.8	42,667
Other management-related occupations	10.3	43,151
Physical scientists	10.0	35,720
Biological/life scientists	23.6	34,472
Health technologists and technicians	11.0	35,587
Teachers, elementary school through grade 12	11.8	31,629
Other occupations	9.0	40,024
Sociology:		
All occupations	114.3	$38,785
Top and midlevel managers, executives, and administrators	26.0	50,424
Other management-related occupations	6.3	38,315
Social workers	7.5	32,465
Other occupations	7.9	33,036
History:		
All occupations	206.7	$38,272
Top and midlevel managers, executives, and administrators	34.1	52,504
Sales occupations, insurance, securities, real estate, and business services	16.6	46,850
Computer occupations, excluding engineers	9.1	41,932
Other management-related occupations	12.6	40,664
Teachers, elementary school through grade 12	24.0	33,261

Table 5. Continued—Employment and median annual earnings of bachelor's degree graduates aged 35–54, by selected major field of study and occupation, 1993

Occupation	Employment (in thousands	Median annual earnings
Men		
Sales occupations, commodities except retail	21.9	50,495
Architects	14.4	45,295
Other management-related occupations	33.1	54,176
Physical scientists.	4.9	43,118
Transportation and material-moving occupations	12.9	57,797
Engineering technologists and technicians, including surveyors	20.5	36,348
Construction trades, mechanics and repairers`	22.4	37,240
Teachers, postsecondary	5.3	37,503
Sales occupations, retail	8.4	24,288
Clerical and administrative support occupations	7.9	28,867
Precision/production occupations, operators and related occupations	6.3	31,011
Other occupations	15.6	36,291
Mathematics:		
All occupations	163.1	$50,532
Top and midlevel managers, executives, and administrators	29.0	73,815
Mathematical scientists	9.3	58,903
Engineers, including computer	16.6	52,924
Computer occupations, excluding engineers	39.5	52,609
Other management-related occupations	10.4	44,092
Teachers, elementary school through grade 12	9.7	34,498
Pharmacy:		
All occupations	79.5	$50,508
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	68.8	50,526
Physics:		
All occupations	48.4	$50,442
Top and midlevel managers, executives, and administrators	7.0	71,044
Engineers, including computer	14.4	57,549
Computer occupations, excluding engineers	7.2	49,396
Physical scientists	4.9	42,803
Physical therapy and other rehabilitation services:		
All occupations	12.7	$49,639
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	10.5	49,855
Economics:		
All occupations	154.9	$48,071
Top and midlevel managers, executives, and administrators	37.2	60,085
Sales occupations, insurance, securities, real estate, and business services	22.6	52,696
Computer occupations, excluding engineers	8.7	45,956
Accountants, auditors, and other financial specialists	14.7	51,487
Other management-related occupations	8.7	43,648
Other occupations.	7.7	40,709
Chemistry:		
All occupations	96.4	$47,896
Men		
Clerical and administrative support occupations	8.4	28,292
Other occupations	16.2	36,864
Liberal arts/general studies:		
All occupations	63.0	$38,130
Top and midlevel managers, executives, and administrators	10.6	44,563
Criminal justice/protective service:		
All occupations	100.7	$37,800
Top and midlevel managers, executives, and administrators	15.4	49,217
Protective service occupations	44.0	38,843
Social workers	6.1	26,600
English language and literature/letters:		
All occupations		
Top and midlevel managers, executives, and administrators	26.6	55,247
Sales occupations, insurance, securities, real estate, and business services	14.2	68,073
Computer occupations, excluding engineers	4.7	49,155
Other management-related occupations	8.7	40,692
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	16.5	42,890
Teachers, elementary school through grade 12	15.2	30,685
Agriculture:		
All occupations	190.8	$36,647
Top and midlevel managers, executives, and administrators	27.8	46,272
Other management-related occupations	11.8	38,158
Biological/life scientists	16.6	36,905
Farmers, foresters, and fishermen	37.3	30,509
Other occupations	10.0	30,267
Communications:		
All occupations	251.6	$36,321
Top and midlevel managers, executives, and administrators	42.1	49,914
Sales occupations, insurance, securities, real estate, and business services	17.9	34,661
Computer occupations, excluding engineers	7.8	33,494
Sales occupations, other marketing and sales	19.8	37,093
Sales occupations, commodities except retail	12.3	43,486
Other management-related occupations...	16.3	38,129
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	60.8	36,944
Other occupations	13.1	36,449
Health/medical technologies:		
All occupations	16.3	$36,290
Health technologists and technicians	8.6	35,604
Education, including physical education:		
All occupations	488.7	$34,491
Top and midlevel managers, executives, and administrators	61.2	47,870

Table 5. Continued—Employment and median annual earnings of bachelor's degree graduates aged 35–54, by selected major field of study and occupation, 1993

Occupation	Employment (in thousands	Median annual earnings
Men		
Top and midlevel managers, executives, and administrators	20.3	62,401
Engineers, including compute	8.0	54,475
Computer occupations, excluding engineers	4.6	42,760
Physical scientists	27.3	43,322
Accounting:		
All occupations	623.1	$47,793
Top and midlevel managers, executives, and administrators	153.8	60,812
Sales occupations, insurance, securities, real estate, and business services	22.0	49,332
Computer occupations, excluding engineers	22.0	45,848
Accountants, auditors, and other financial specialists	318.1	45,700
Other management-related occupations	21.0	50,083
Clerical and administrative support occupations	21.1	29,498
Other occupations	9.3	39,664
Computer and information sciences:		
All occupations	222.3	$44,916
Top and midlevel managers, executives, and administrators	23.2	59,726
Engineers, including compute	30.1	49,063
Computer occupations, excluding engineers	139.3	43,804
Other management-related occupations	5.5	40,474
Engineering-related technologies:		
All occupations	199.7	$43,759
Top and midlevel managers, executives, and administrators	36.7	55,162
Engineers, including computer	66.1	47,357
Computer occupations, excluding engineers	9.5	40,393
Sales occupations, commodities except retail	8.0	55,608
Other management-related occupations	7.8	42,230
Engineering technologists and technicians, including surveyors	21.0	38,251
Construction trades, mechanics and repairers	10.2	33,242
Other occupations	8.6	38,911
Nursing:		
All occupations	25.2	$43,538
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	20.5	43,099
Business, except accounting and actuarial science:		
All occupations	1,876.5	$43,047
Top and midlevel managers, executives, and administrators	507.3	54,211
Engineers, including computer	37.8	47,229
Sales occupations, insurance, securities, real estate, and business services	208.3	50,718
Computer occupations, excluding engineers	74.7	44,951
Sales occupations, other marketing and sales	102.8	45,008
Men		
Engineers, including computer	9.3	38,406
Sales occupations, insurance, securities, real estate, and business services	20.1	52,016
Computer occupations, excluding engineers.	12.8	45,942
Sales occupations, other marketing and sales	13.2	39,379
Sales occupations, commodities except retail	17.9	42,365
Other management-related occupations	22.1	41,165
Transportation and material-moving occupations	7.6	26,112
Protective service occupations	8.1	40,682
Engineering technologists and technicians, including surveyors	6.6	33,875
Construction trades, mechanics and repairers	22.3	31,779
Teachers, postsecondary	9.8	30,305
Teachers, elementary school through grade 12	172.5	31,388
Sales occupations, retail	10.3	28,508
Clerical and administrative support occupations	11.5	33,421
Social workers	4.9	30,858
Food and other service occupations, except health	7.3	25,166
Precision/production occupations, operators and related occupations	14.2	27,020
Other occupations	23.8	31,227
Linguistics/foreign languages and literature:		
All occupations	36.7	$32,490
Teachers, elementary school through grade 12	6.8	32,634
Visual and performing arts:		
All occupations	226.5	$32,083
Top and midlevel managers, executives, and administrators	20.0	49,316
Computer occupations, excluding engineers	12.0	40,105
Other management-related occupations	13.3	31,669
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	56.8	34,581
Teachers, elementary school through grade 12	23.5	31,374
Clerical and administrative support occupations	11.0	22,975
Precision/production occupations, operators and related occupations	10.1	24,343
Other occupations	11.3	26,262
Social work:		
All occupations	21.6	$30,606
Social workers	6.3	28,006
Philosophy, religion, and theology:		
All occupations	115.5	$29,693
Top and midlevel managers, executives, and administrators	14.3	44,675
Clergy and other religious workers	39.7	26,702
Other fields (not listed):		
All occupations	441.9	$37,227
Top and midlevel managers, executives, and administrators	79.7	48,068

Table 5. Continued—Employment and median annual earnings of bachelor's degree graduates aged 35–54, by selected major field of study and occupation, 1993

Occupation	Employment (in thousands	Median annual earnings
Men		
Accountants, auditors, and other financial specialists	162.7	40,756
Sales occupations, commodities except retail	139.7	41,960
Personnel, training, and labor relations specialists	34.4	45,152
Other management-related occupations	175.9	40,584
Transportation and material-moving occupations	33.0	40,837
Protective service occupations	20.2	34,552
Engineering technologists and technicians, including surveyors	12.2	38,551
Construction trades, mechanics and repairers	41.5	35,517
Teachers, elementary school through grade 12	7.4	32,584
Sales occupations, retail	78.8	34,627
Farmers, foresters, and fishermen	13.1	29,234
Clerical and administrative support occupations	57.8	29,701
Social workers	7.8	26,543
Food and other service occupations, except health	36.3	27,405
Precision/production occupations, operators and related occupations	30.9	30,357
Other occupations	63.8	33,806
Political science and government:		
All occupations	188.7	$41,575
Top and midlevel managers, executives, and administrators	47.1	55,311
Sales occupations, insurance, securities, real estate, and business services	17.6	46,250
Computer occupations, excluding engineers	5.8	46,640
Accountants, auditors, and other financial specialists	9.4	38,649
Sales occupations, commodities except retail	12.1	51,498
Other management-related occupations	13.3	41,638
Protective service occupations	7.7	45,946
Other occupations	12.5	29,680
Sales occupations, insurance, securities, real estate, and business services	22.4	38,906
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	13.1	43,140
Computer occupations, excluding engineers	11.3	43,902
Sales occupations, other marketing and sales	14.0	42,618
Accountants, auditors, and other financial specialists	8.5	35,217
Sales occupations, commodities except retail	16.3	41,823
Other management-related occupations	30.1	35,960
Physical scientists	7.8	35,968
Transportation and material-moving occupations	18.1	49,232
Protective service occupations	23.5	35,514
Engineering technologists and technicians, including surveyors	6.6	34,783
Biological/life scientists	15.2	34,542
Construction trades, mechanics and repairers	15.2	33,559
Teachers, elementary school through grade 12	24.6	30,961
Sales occupations, retail	10.2	28,672
Farmers, foresters, and fishermen	6.8	32,415
Clerical and administrative support occupations	9.0	29,930
Social workers	4.8	29,655
Food and other service occupations, except health	12.2	29,554
Precision/production occupations, operators and related occupations	11.0	25,053
Women		
All major fields of study:		
All occupations	5,097.6	$31,120
Engineers, including computer	82.1	44,166
Mathematical scientists		
Top and midlevel managers, executives, and administrators	412.4	40,187
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	428.4	39,567
Computer occupations, excluding engineers	214.7	39,291
Sales occupations, commodities except retail	76.9	36,561
Physical scientists.	24.0	36,315
Accountants, auditors, and other financial specialists	356.3	35,544
Sales occupations, insurance, securities, real estate, and business services	172.6	35,300
Architects	12.4	34,921
Protective service occupations	21.1	33,715
Other management-related occupations	255.6	33,409
Other occupations	31.0	31,376
Political science and government:		
All occupations	80.3	$30,312
Top and midlevel managers, executives, and administrators	10.9	41,295
Clerical and administrative support	10.3	24,874
Other occupations	7.6	31,465
Psychology:		
All occupations	204.6	$30,203
Top and midlevel managers, executives, and administrators	23.5	37,212
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants.	9.6	34,277
Computer occupations, excluding engineers	5.3	41,324
Accountants, auditors, and other financial specialists	9.6	33,851
Sales occupations, insurance, securities, real estate, and business services	9.1	38,779
Other management-related occupations	17.4	32,370
Personnel, training, and labor relations specialists	11.5	34,517
Sales occupations, other marketing and sales	8.8	31,804
Teachers, elementary school through grade 12	12.7	30,036

Table 5. Continued—Employment and median annual earnings of bachelor's degree graduates aged 35–54, by selected major field of study and occupation, 1993

Occupation	Employment (in thousands	Median annual earnings
Women		
Personnel, training, and labor relations specialists	101.6	33,259
Health technologists and technicians	113.1	32,555
Sales occupations, other marketing and sales	150.0	32,495
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	175.1	31,823
Biological/life scientists	47.5	30,877
Teachers, postsecondary	32.9	30,752
Engineering technologists and technicians, including surveyors	18.2	30,540
Transportation and material-moving occupations	9.9	29,964
Teachers, elementary school through grade 12	942.3	28,841
Other health occupations	56.4	27,558
Social scientists, including historians	14.6	28,565
Librarians, archivists, curators	26.9	26,195
Social workers	127.9	26,078
Counselors, educational and vocational	26.9	25,015
Teachers, prekindergarten and kindergarten	134.8	24,962
Food and other service occupations, except health	137.6	24,618
Clergy and other religious workers	10.6	24,019
Sales occupations, retail	132.1	23,332
Clerical and administrative support	514.8	23,250
Precision/production occupations, operators and related occupations	36.8	21,132
Other occupations	219.9	29,865
Pharmacy:		
All occupations	29.7	$47,622
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	26.3	48,175
Engineering:		
All occupations	75.7	$44,159
Engineers, including computer	45.9	44,450
Top and midlevel managers, executives, and administrators	5.4	52,266
Computer occupations, excluding engineers	4.3	46,771
Computer and information sciences:		
All occupations	95.6	$39,805
Engineers, including computer	8.8	44,922
Top and midlevel managers, executives, and administrators	4.4	54,874
Computer occupations, excluding engineers	66.8	40,336
Physical therapy and other rehabilitation/ therapeutic services:		
All occupations	59.3	$39,575
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	47.1	40,077
Nursing:		
All occupations	305.1	$39,335
Top and midlevel managers, executives, and administrators	17.4	43,903
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	248.9	39,740
Accounting:		
All occupations	74.9	$36,625
Social scientists, including historians	5.0	25,984
Social workers	19.4	25,740
Food and other service occupations, except health	7.8	29,461
Clerical and administrative support.	25.0	24,329
Other occupations	6.0	31,634
English language and literature/letters:		
All occupations	222.1	$30,069
Top and midlevel managers, executives, and administrators	19.3	46,921
Computer occupations, excluding engineers	6.6	36,989
Other management-related occupations	12.2	30,415
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	20.4	32,028
Teachers, elementary school through grade 12	46.7	28,491
Social workers	4.2	26,146
Clerical and administrative support	30.4	23,592
Other occupations	13.3	32,764
Communications:		
All occupations	207.8	$29,763
Top and midlevel managers, executives, and administrators	21.0	39,719
Computer occupations, excluding engineers	5.6	35,049
Sales occupations, insurance, securities, real estate, and business services	15.7	32,065
Other management-related occupations	13.9	31,381
Sales occupations, other marketing and sales	17.6	32,040
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	47.9	32,613
Clerical and administrative support	24.1	23,476
Other occupations	10.9	28,765
Sociology:		
All occupations	141.8	$29,698
Top and midlevel managers, executives, and administrators	15.0	39,513
Other management-related occupations	8.9	32,023
Teachers, elementary school through grade 12	11.3	30,613
Social workers	18.3	27,438
Clerical and administrative support	22.1	23,941
Other occupations	8.1	26,805
History:		
All occupations	91.2	$29,480
Teachers, elementary school through grade 12	22.3	29,454
Clerical and administrative support	12.3	24,491
Criminal justice/protective service:		
All occupations	37.8	$29,334
Social workers	5.7	28,762
Visual and performing arts:		
All occupations	269.3	$28,252
Top and midlevel managers, executives, and administrators	20.1	37,753
Computer occupations, excluding engineers	6.9	33,284
Sales occupations, insurance, securities, real estate, and business services	8.8	32,154

Table 5. Continued—Employment and median annual earnings of bachelor's degree graduates aged 35–54, by selected major field of study and occupation, 1993

Occupation	Employment (in thousands	Median annual earnings
Women		
Top and midlevel managers, executives, and administrators	30.9	45,812
Computer occupations, excluding engineers	7.4	35,107
Accountants, auditors, and other financial specialists	184.3	37,314
Other management-related occupations	8.2	37,494
Clerical and administrative support	22.5	22,610
Chemistry:		
All occupations	33.0	$35,948
Physical scientists	8.4	37,993
Mathematics:		
All occupations	86.1	$35,792
Engineers, including computer	4.8	51,576
Mathematical scientist	3.7	43,790
Top and midlevel managers, executives, and administrators	6.8	52,885
Computer occupations, excluding engineers	20.9	44,673
Teachers, elementary school through grade 12	18.3	27,550
Health/medical technologies:		
All occupations	65.1	$34,984
Health technologists and technicians	45.8	34,557
Biological/life scientists	5.2	38,132
Architecture/environmental design:		
All occupations	17.7	$33,571
Architects	7.0	38,043
Liberal arts/general studies:		
All occupations	68.6	$32,820
Teachers, elementary school through grade 12	12.7	33,513
Clerical and administrative support	7.8	26,267
Biological/life sciences:		
All occupations	156.9	$31,995
Engineers, including computer	3.2	37,944
Top and midlevel managers, executives, and administrators	13.8	42,133
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	10.7	34,791
Computer occupations, excluding engineers	3.8	35,133
Physical scientists	5.3	36,459
Health technologists and technicians	27.4	32,945
Biological/life scientists	24.8	30,843
Teachers, elementary school through grade 12	10.6	28,288
Clerical and administrative support	9.8	21,503
Other occupations	5.7	26,064
Linguistics/foreign languages and literature:		
All occupations	93.0	$31,745
Top and midlevel managers, executives, and administrators	9.2	39,038
Teachers, elementary school through grade 12	18.5	30,725
Clerical and administrative support	14.6	23,793
Business, except accounting and actuarial science:		
All occupations	671.8	$31,621
Engineers, including computer	3.1	45,312
Women		
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	55.0	30,581
Teachers, elementary school through grade 12	34.7	29,855
Food and other service occupations, except health	10.4	21,854
Sales occupations, retail	15.2	21,194
Clerical and administrative support	35.6	22,282
Other occupations	14.7	31,628
Agriculture:		
All occupations	34.8	$28,186
Biological/life scientists	5.2	30,048
Education, including physical education:		
All occupations	1,209.6	$28,047
Top and midlevel managers, executives, and administrators	50.3	32,718
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	10.7	34,063
Computer occupations, excluding engineers	15.7	40,559
Accountants, auditors, and other financial specialists	13.3	29,460
Sales occupations, insurance, securities, real estate, and business services	25.0	35,673
Other management-related occupations	34.7	33,774
Personnel, training, and labor relations specialists	14.1	29,748
Health technologists and technicians	5.1	25,602
Sales occupations, other marketing and sales	17.4	29,760
Artists, broadcasters, editors, entertainers, public relations specialists, and writers	10.6	29,031
Teachers, postsecondary	10.1	29,159
Teachers, elementary school through grade 12	662.8	28,639
Other health occupations	8.4	22,161
Social workers	12.3	23,366
Counselors, educational and vocational	5.3	28,692
Teachers, prekindergarten and kindergarten	93.2	25,255
Food and other service occupations, except health	33.7	22,788
Sales occupations, retail	22.5	21,222
Social work:		
All occupations	85.1	$27,181
Top and midlevel managers, executives, and administrators	8.0	35,153
Social workers	36.4	26,575
Home economics:		
All occupations	122.8	$27,101
Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	5.5	28,765
Teachers, elementary school through grade 12	26.3	28,998
Sales occupations, retail	11.8	23,511
Clerical and administrative support	16.5	23,781
Other fields (not listed):		
All occupations	357.9	$32,064
Engineers, including computer	5.8	43,006

Table 5. Continued—Employment and median annual earnings of bachelor's degree graduates aged 35–54, by selected major field of study and occupation, 1993

Occupation	Employment (in thousands	Median annual earnings	Occupation	Employment (in thousands	Median annual earnings
Women			**Women**		
Top and midlevel managers, executives, and administrators	86.7	40,067	Top and midlevel managers, executives, and administrators	35.2	40,869
Computer occupations, excluding engineers	31.2	36,337	Registered nurses, pharmacists, dietitians, therapists, and physician's assistants	14.1	39,648
Sales occupations, commodities except retail	28.2	36,188	Physical scientists	4.7	36,412
Accountants, auditors, and other financial specialists	84.0	34,516	Accountants, auditors, and other financial specialists	13.9	33,355
Sales occupations, insurance, securities, real estate, and business services	45.0	36,745	Sales occupations, insurance, securities, real estate, and business services	13.2	42,933
Other management-related occupations	68.5	32,487	Other management-related occupations	15.9	34,765
Personnel, training, and labor relations specialists	26.8	35,368	Health technologists and technicians	13.6	29,350
Sales occupations, other marketing and sales	44.3	33,590	Sales occupations, other marketing and sales	10.8	32,859
Teachers, elementary school through grade 12	12.1	28,736	Biological/life scientists	5.0	30,726
Social workers	4.9	23,411	Teachers, elementary school through grade 12	30.3	29,616
Food and other service occupations, except health	14.7	25,528	Other health occupations	7.9	30,368
Sales occupations, retail	27.7	29,305	Social workers	10.3	27,618
Clerical and administrative support	115.4	23,340	Food and other service occupations, except health	16.3	23,987
Other occupations	37.6	30,517	Clerical and administrative support	33.2	24,435
			Other occupations	29.2	30,215

NOTE: Includes only those graduates working full time in 1993 who had a bachelor's degree in April 1990. For each sex, major fields of study and occupations are ranked by median annual earnings. "Other occupations" under individual education programs refers to occupations besides those listed under "All major fields of study."

SOURCE: Tabulated by the Bureau of Labor Statistics from a National Science Foundation survey conducted by the Bureau of the Census.

puter and information sciences majors having a very high proportion of young workers and mathematics and physics majors a high proportion of older workers. Among young and midcareer workers in computer occupations, computer and information sciences majors earned slightly above the median for all workers in computer occupations.

In the lowest earnings quintile, 40 percent of the women were elementary and secondary school teachers or in clerical and administrative support occupations. Men in the lowest earnings quintile were less concentrated by occupation than women, but 9 percent were elementary and secondary school teachers, and 11 percent were in nonretail sales and marketing occupations. Another 9 percent were employed as top and midlevel managers, executives, and administrators.

Master's degree graduates

Outcomes for graduates with master's degrees are fairly similar to those for graduates with bachelor's degrees, although there are some differences in the fields of study with high and low earnings. For example, unlike the bachelor's degree level, a master's degree in business is the top-ranked field for men and the second ranked for women. (See table 6.) Male communications majors ranked 8th, compared to 23rd place for communications majors with bachelor's degrees. Both male and female mathematics and economics majors had much lower rankings at the master's level.

Influences on earnings

The data presented in this article clearly show variation in earnings both across and within fields of study. Therefore, there is no major field of study that guarantees either high or low earnings. However, graduates in some majors are more likely to be among the highest earners and less likely to be among the lowest earners, while the opposite is likely in some other fields of study. There appears, therefore, to be a job market for college graduates in specific fields of study, rather than a universal market for college graduates as a whole.

There are a number of reasons that graduates in some majors are likely to earn more than those in others. One is the relationship of the major field of study to occupations that traditionally have higher earnings, such as engineering, computer science, and other fields. In some cases, the skills of graduates are highly valued by employers, but in other cases, employers may view certain majors as more difficult and may assume that graduates in these fields are more able and hard working, whereupon they offer them higher salaries.

Also, graduates in some majors may have skills that are in short supply or in balance in the labor market, so that almost all enter well-paid, college-level jobs. By contrast, graduates in other majors may have skills that are in surplus, so some must take whatever jobs they can find, which often means lower pay.

Not all the observed differences in earnings among workers should be attributed to their major. Individuals with personal characteristics or general skills associated with high or low earnings may have had those earnings even if they had picked other majors. However, further analyses are needed to understand the effect of other factors, such as grade point average, the quality of the college attended, and geographic location, on earnings.[10] In addition, personal characteristics, general abilities, and skills not directly related to the academic field of study may be significant.[11] Data on such factors, however, are not available in as comprehensive a form as one would like them to be.

Footnotes

[1] See the following articles in the Summer 1994 issue of Occupational Outlook Quarterly: Thomas A. Amirault, Job Market Profile of College Graduates in 1992: A Focus on Earnings and Jobs, pp. 21–28; and Gary Steinberg, The Class of '90 One Year After, pp. 11–19.

[2] Steinberg, Class of '90"; and John Tsapogas, Characteristics of Recent Science and Engineering Graduates: 1990, NSF 92–316 (National Science Foundation, 1992).

[3] See Robert Kominski and Rebecca Sutterlin, "What's It 'Worth'? Educational Background and Economic Status: Spring 1990, Current Population Reports, Household Economic Studies, P70–32 (Bureau of the Census, December 1992), for data from the Survey of Income and Program Participation; Estelle James, Nabeel Alsalam, Joseph C. Conaty, and Duc-Le To, College Quality and Future Earnings: Where Should You Send Your Child to College? AEA papers and Proceedings, May 1989, pp. 247–52; and Clifford Adelman, Women at Thirtysomething: Paradoxes of Attainment (Department of Education, 1992), for data from the National Longitudinal Survey of the high school class of 1972.

[4] The data generated from this analysis are part of the NSF's sestat, a system of data about scientists and engineers. For more information, contact Kelly Kang, National Science Foundation, 4201 Wilson Blvd., Room 965, Arlington, VA 22230, INTERNET kkang@nsf.gov, phone (703) 306–1776, or through the World Wide Web.

[5] Data for earnings of college graduates employed part time were not coded for analysis in the nsf survey because of concerns that the data were not appropriate for use in analyses.

[6] These ranges divide graduates with bachelor's degrees into fairly equal-sized groups. In the case of graduates holding master's degrees, , there are fewer in the young age group. The relatively small number of graduates aged 65 and older were excluded, because earnings tend to decline after age 64. The 25–4 age group actually has few workers aged 25 or 26, as the survey population includes only individuals who had at least a bachelor's degree 3 years earlier, at the time of the 1990 census.

[7] Data for earnings of college graduates employed part time were not coded for analysis in the nsf survey because of concerns that the data were not appropriate for use in analysis.

[8] Variation in earnings is kept to a minimum by the 10-year age span. For men with a bachelor's degree, median annual earnings increase from $42,000 to $45,000, and for men with a master's degree, the increase is even smaller—from $50,000 to $51,000. For women, the change is yet more modest.

[9] To make the number of tables in this article manageable, and to provide enough observations to show occupational detail, data were presented for the three age groups combined. Analysis showed that earnings differences, by occupation, were similar for each group separately.

[10] See James, Alsalam, Conaty, and To, "College Quality and Future Earnings"; and Earnest T. Pascarella and Patrick T. Terenzini, How College Affects Students: Findings and Insights from Twenty Years of Research (San Francisco, Jossey-Bass, 1991).

[11] For information on personal characteristics, see John Shingleton and L. Patrick Sheetz, Recruiting Trends 1983-84, Michigan State University (East Lansing, mi, Michigan State University, [Au: Need year.]; Paul A. Whiting, "Will Your Next Producer Be a Winner," Insurance Re*view* (III), April 1991; and Victor R. Lindquist, *The Northwestern Lindquist-Endicott Report—1992* (Evanston, IL, Northwestern University, 1992), especially p. 14.